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Annali del Museo Civico di Storia Naturale di Genova. Vol. XIV, 8vo, 1879. From the museum.

Il Canton Ticino Meridionale ed i Paesi Finitimi Spiegazione del foglio XXIV. Tauf. colorita geol. da Spreafico, Negri e Stoppani per Torquato Taramelli. (Vol. XVII Mat. Carta Geol. Della Soizzera.) 4to, 1880. From the author.

Annales del Museo Nacional de Mexico. Tomo II, Entrega 1a. 4to, 1880.

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GENERAL NOTES.

BOTANY.

Effects of Uninterrupted Sunshine on Plants.—Professor Schübeler has made a series of observations on the effect produced by the almost unbroken sunlight of the short Scandinavian summer, on plants raised from foreign seed, *i. e.*, wheat from Bessarabia and Ohio. The general results are stated by the *Journal* of the Royal Microscopical Society, as follows:—

1. The grain of wheat that has been grown in low-lying lands, may be propagated with success on the high fields, and will reach maturity earlier at such elevations, even, although at a lower mean temperature. Such grain, after having been raised for several years at the highest elevation, which admits of its cultivation, is found, when transferred to its original locality, to ripen earlier than the other crops which had not been moved. The same result is noticeable in grain that has been transported from a southern to a more northern locality, and *vice versâ.*

2. Seeds imported from a southern locality, when sown within the limits compatible with their cultivation, increase in size and weight; and these same seeds, when restored from a more northern locality to their original southern home, gradually diminish to their former dimensions. A similar change is observable in the leaves and blossoms of various kinds of trees and other plants. Further, it is found that plants raised from seed ripened in a northern locality are hardier, as well as larger, than those grown in the south, and are better able to resist excessive cold.

3. The further north we go, within certain fixed limits, the more energetic is the development of the pigments in flowers, leaves and seeds. Similarly, the aroma or flavor of various plants or fruits is augmented in intensity the further north they are carried within the limits of their capacity for cultivation; and conversely, the quantity of saccharine matter diminishes in proportion as the plant is carried further northward.

Destruction of Insects by Fungi.—Prof. Elias Metschnikoff, the distinguished Russian Embryologist, has, according to *Nature*, recently investigated this subject and has given an explanation of the possible value of yeast application more satisfactory than that adopted by Dr. Hagen. The general result of the most accurate investigations of the beer-yeast fungus (*Saccharomyces cerevisiæ*) is entirely opposed to the notion that it can enter an insect's body, and produce a disease. Metschnikoff has examined other minute fungi, and has by experiment proved their very deadly character to the insects exposed to infection; one of the most destructive is the green muscardine *(Isaria destructor)*. He has cultivated the spores in quantity by the use of beer-mash; in this decoction, the green muscardine produced a rich mycelium and finally spores. Metschnikoff recommended the cultivation of an insect-disease-producing fungus in quantities to places infested by these insects. Will not some of the numerous microscopists in this country make a practical application of this discovery to the destruction of our noxious insects? It might be readily tried this summer on the currant saw-fly worm, or canker worm, tent caterpillar, the potato beetle, or any other destructive insect which can be experimented upon in large numbers near the laboratory.

THE ORIGIN AND SURVIVAL OF THE TYPES OF FLOWERS.—In a lecture delivered before the California Academy of Sciences, October, 1879, Prof. Cope proposed the hypothesis that "the consciousness of plant-using animals, as insects, has played a most important part in modifying the structure of the organs of fructification in the vegetable kingdom. Certain it is that insects have been effective agents in the preservation of certain forms of plants" (AMERICAN NATURALIST, 1880, p. 266). Dr. Hermann Mueller has recently published a book in which he seeks to explain the existing variations in the forms of flowers on the principle of selection. He supposes that insects of different tastes bred peculiar flowers, just as men breed peculiar races of cattle. Carrion-loving insects bred their kind of flowers, and long tongued insects, the tubular kinds, and many other classes of insects have, each class, bred the flowers they love best.

Dr. Mueller is abundantly able to theorize on this subject, and his views, so far as they go, will command the assent of most persons. But like all the Darwinians, he confounds survival or preservation of characters, with the origin of characters. On this subject Prof. Cope has the following (l. c. 266): "I would suggest whether the mutilations and strains they [plant-using animals] have for long periods inflicted on the flowering organs may not, as in some similar cases in the animal kingdom, have *originated* peculiarities of structure."

BOTANICAL NOTES.—Dr. Parry during his explorations in southern California, discovered a handsome new lily, which has been described by Mr. Watson as *Lilium parryi*, in the Proceedings of the Davenport Academy of Natural Sciences, with an excellent plate. The second volume on the botany of California, by Mr. Watson, is now going through the press, and will be published in midsummer.——A revision of the genus *Pinus*, by Dr. Engelman, appears in the Transactions of the Academy of Science of

St. Louis, February, 1880, illustrated by three plates.——In the *Bulletin* of the Torrey Botanical Club, for April, Mr. F. Wolle gives a fourth list of fresh water algæ mostly found in the vicinity of Bethlehem, Pennsylvania, of which at least ninety are new to the United States flora, and a number are described as new to science.——A communication on the "influence of electricity upon the growth of plants," was presented by Mr. J. M. Batchelder, of Boston, to the Club. The author sowed "pepper-grass" seeds on cotton floating on the surface of distilled water contained in two tumblers. One of the tumblers was insulated, and in it was placed a coiled copper wire, the other extremity of which communicated with a revolving belt. Both tumblers were placed under the same conditions of light and heat. It was found that the electricity retarded both the germination of the seeds and the subsequent growth of the plants to a remarkable degree. At the conclusion of his experiments, Mr. Batchelder discovered that while the roots of the plants in the non-electrified water were growing normally, those submitted to the action of electricity were twisted and coiled in an intricate manner among the fibres of the cotton.——A new species of Potamogeton (*P. illinoiensis*) is described by T. Morong, with notes on other species in the *Botanical Gazette*, for May. In the June number, G. Engelman notices the vitality of the seeds of serotinous cones, and E. L. Greene publishes notes on certain silkweeds.

ZOÖLOGY.[1]

THE HERRING OF THE PACIFIC COAST.—The herring fishery is scarcely so important upon the coast as upon those of the Atlantic. How much of this is due to the herrings, and how much to the human inhabitants of the region is hard to tell. The species of Clupea, commonly known here as the herring, *Clupea mirabilis*, is, I believe, smaller than the Atlantic herring, and hitherto the cured fish has not been able to compete with the Eastern article. This, however, is not due to any scarcity of the fish, which occurs in shoals all along the coast at certain seasons, and is always abundant in the more northern regions. The herring found along the coast of the United States are said to be much inferior to those taken between Puget sound and Oonalashka.

Some have been cured in Humboldt bay, but Humboldt herring are said to be very poor. The Alaska Fish Company have put some up at Oonalashka, which, having been very carefully cleaned and prepared, were sold to restaurants and oyster shops for lunch herring, and the Cutting Packing Company salt some at Sitka. The Indians press the whole fish for oil, and the spawn is kept to form part of their winter supply of food.

Besides the herring, we have another Clupea, *C. sagax*, com-

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[1] The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COUES, U. S. A.